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"[1] *J. Soc. Chem. Ind.*, 1923, 42, 185, 205."

*J. C. Drummond and T. P. Hilditch: The Relative Values of Cod Liver Oils from Various Sources, His Majesty's Stationery Office, London, 1930.

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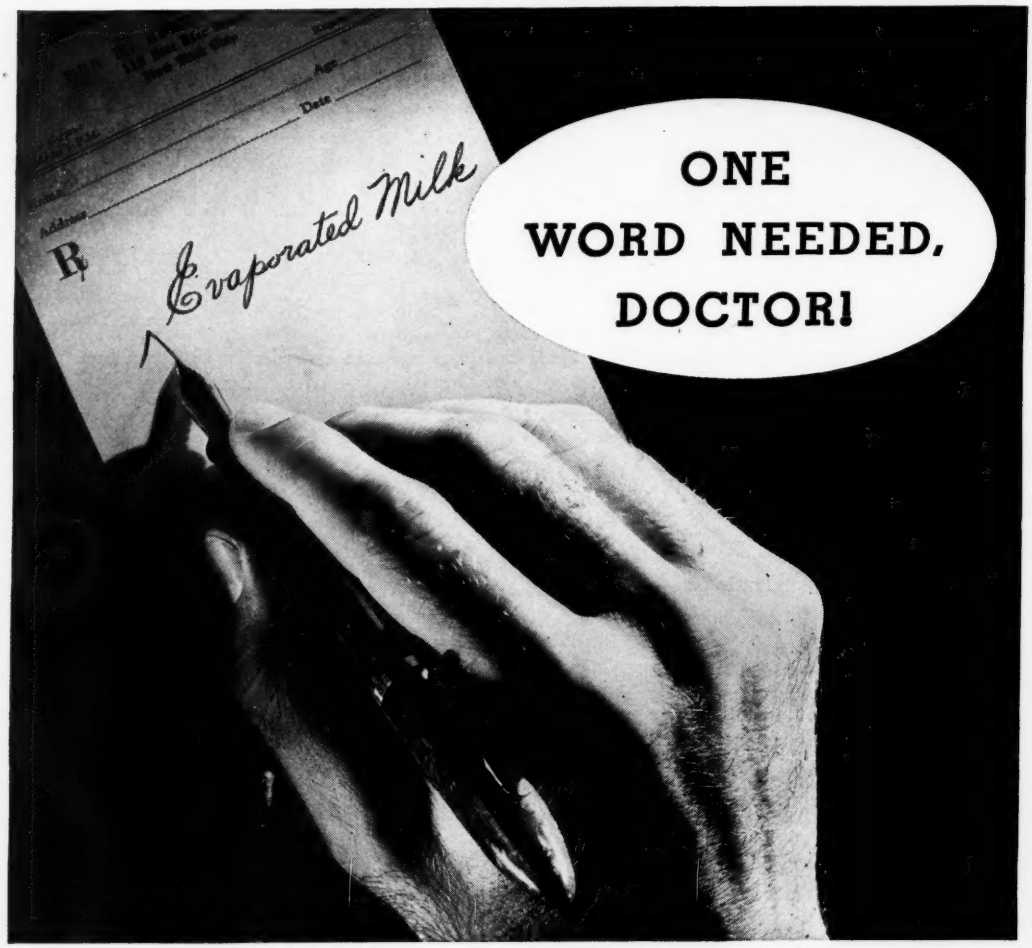

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ORIGINAL ARTICLES

CONGENITAL INTESTINAL OBSTRUCTION WITH REPORT OF CASE*

By REUBEN C. BATES, M.D.
122 WATERMAN STREET, PROVIDENCE, R. I.

Congenital intestinal obstruction is a deformity of the intestinal tract due to a mal-development in utero. It is characterized anatomically by a marked stenosis or complete atresia of the bowel lumen, and clinically by persistent vomiting, constipation, anuria and rapid progressive emaciation usually terminating fatally.

The bowel above the obstruction is usually greatly dilated and the wall hypertrophied, especially when the obstruction is complete. The bowel below the obstruction is, as a rule, not merely empty and collapsed, as in acquired chronic obstruction, but is firmly contracted and cord-like. Never having functioned, it is often the caliber of the adult appendix, and is frequently designated as worm-like. It has, nevertheless, a perfect lumen and can be distended with moderate water pressure to normal or almost normal size.

The terms atresia, stenosis, occlusion and microcolon have sometimes been used interchangeably in the literature to denote complete or partial diminution of the lumen of the large bowel.

Occlusion of the intestines is relatively uncommon. The most common sites are near the ampulla of vater, the duodeno-jejunal junction, and the ileocecal valve. Davis and Poynter in 1922 collected 392 cases in which the obstruction was situated between the pylorus and the anus. In one-fourth of these cases the atresia was found in the ileum and cecum and only 39 cases showed the atresia located in the colon. In most instances, the lumen is occluded by a thin membrane.

Atresias and stenosis in the region of the colon are far more rare than those of the small intestine. According to Kreuter's statistics, in 50% of the cases there are also obstructions of the lumen of the small intestine.

Heckel and Apfelbach reported a series of twenty-nine cases of atresia of the colon and these occurred in the following order: in seven, atresia occurred in the sigmoid flexure and rectum; in five, in the ascending portion of the colon; in three, in the transverse portion, and in two each, in the ileocecal valve, splenic flexure and descending portion. In eight instances, many of these portions of the colon were continuously occluded.

The origin of congenital stenosis and atresias in the region of the digestive tract has not yet been fully explained. The following factors are suggested as partly explanatory: (1) Mechanical factors; (2) inflammatory processes; (3) embryonal disturbances of development.

The first attempt at operation was made by Bland Sutton. The operations consisted of an enterostomy. Since then a number of operations have been performed, nearly all of the operators contenting themselves with bringing up the end of the proximal segment and making an enterostomy.

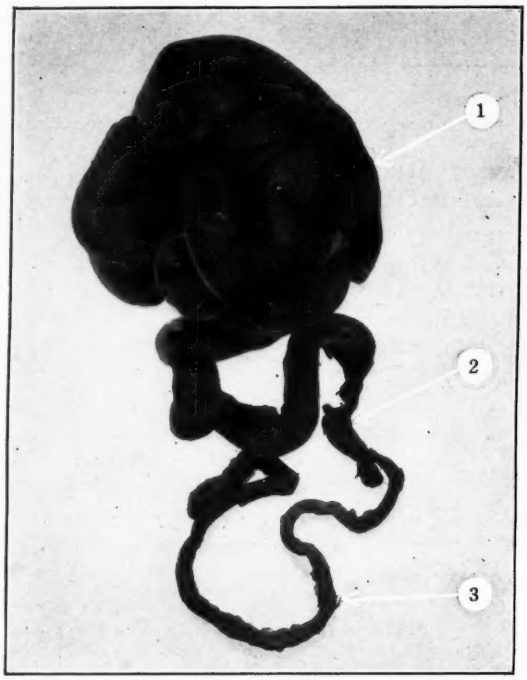
The outlook for the baby is extremely grave, owing mainly to the fact that diagnosis is rarely made early, and also that the intestine in infants is normally small and anastomosis is at best difficult.

Rechter, writing in Abt's Pediatrics, was able to find two cases in the literature where anastomosis was done with success, and adds a third case of his own, which gives some indication of high mortality.

Report of Case

B. DeF., a full-term female infant weighing 6 pounds was born at the Providence Lying-In Hospital on March 3, 1933, at 4 A. M. Eighteen hours after birth the abdomen was considerably distended although the baby nursed and seemed quite well. On the second day the distention was quite marked and the baby vomited practically all feedings. The baby was said to have passed meconium the first day of birth. Rectal examination showed a complete obstruction about 1½ inches from the anus.

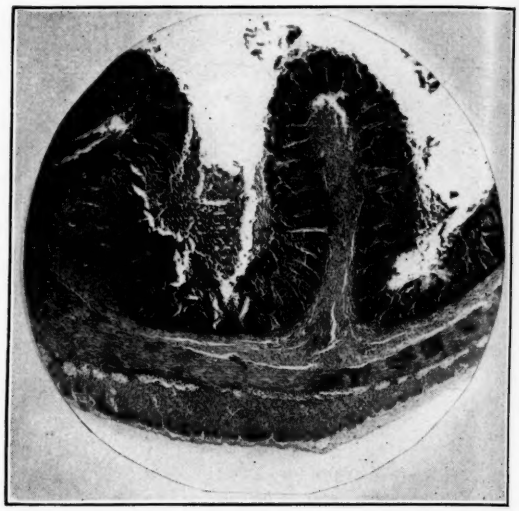
*Presented at the staff meeting of the Lying-in Hospital, June, 1933.



Intestines of an infant age 4 days, showing complete atresia of large intestine. 1—indicates the dilated small intestine; 2—the ileo-cecal junction; 3—the contracted large intestine.

Dr. Bugbee performed an ileostomy two days after birth. At this time the baby had no temperature, nursed quite well and did not look sick. The infant died four days after birth.

The necropsy showed the stomach and intestines in their normal positions. The stomach and small intestines were greatly distended and ended blindly at the ileocecal junction. The ileocecal valve was absent and a fine probe could not be passed at this point between the ileum and the coecum. The large intestine measured ¼ inch in diameter, was worm-like in appearance and contained a lumen. Microscopically all the muscle fibres appeared normal in the section of the colon.



Microscopic section of the colon showing normal muscle layers.

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The author is indebted to Dr. B. E. Clark, of the Rhode Island Hospital, for the photographs of the specimen.

RULES GOVERNING THE CHILD HEALTH STATIONS, SUBMITTED BY THE PROVIDENCE CHILD WELFARE COMMITTEE

WILLIAM P. BUFFUM, M.D., *Chairman*

Introductory Note:

The Child Health Stations are located in the densely populated areas of Providence, in rooms of school buildings, or in Community Centers. Their purpose is to provide weighing centers for those infants and pre-school children whose mothers have not scales in the home; and to provide centers for physical examination and medical health supervision of those infants and pre-school children whose parents are financially unable to provide such services through private physicians.

The baby of a mother delivered at a maternity hospital shall not be accepted for health supervision at a Child Health Station without investigation, if a rate of $50.00 in cash has been paid the hospital for service and care. A District or City Nurse shall make the investigation and after considering the conditions found shall form her opinion as to the eligibility or ineligibility of the baby for admittance to the Health Station. If the nurse considers the baby ineligible for the Health Station, she shall urge its regular medical health supervision by her private physician. If the baby is obviously eligible

for the Child Health Station, the nurse shall give to the mother a signed card bearing the list and locations of the Stations and instruct her to take it to the nearest Child Health Station at her first visit with her baby. In case of doubt a letter shall be sent the family physician or obstetrician asking him if he feels the child is a suitable case for attendance at the Health Station and enclosing a form for his reply.

If a baby is brought to the Station without a recommendation from a physician or nurse, the physician who has previously cared for the infant or otherwise the obstetrician, shall be mailed a letter and the same procedure shall be used in the cases of a pre-school child who has been under the care of a private physician within the previous six months.

The name of the family physician shall always be recorded on the child's record card.

Rules Governing the Child Health Stations

Each infant or pre-school child admitted to the Health Station on its first visit is weighed and has a brief history taken and recorded by the nurse. It is then given a complete physical examination by the physician and the findings recorded on its card. The proper feeding and other hygienic measures are then discussed with the mother. Defects or diseases shall be briefly explained to the mother and she is impressed with the desirability of taking the child to her physician for treatment. A form shall be filled out noting the defects found and addressed to the patient's physician.

Breast-fed infants are expected to return to the Health Station at least once a month and bottle-fed once in two weeks. Pre-school children should return at least once in three months. All babies not gaining properly should be seen by station physician and all pre-school children should have a physical examination by the physician at least twice a year and after any illness or operation.

It is especially important that no medical treatment whatever shall be given at the Child Health Station, even for colds, pin worms, eczema, etc. This is for two reasons; in the first place if children are brought in for minor ailments and treated for them, the main function of the Health Station is obscured and less time and attention is given to the routine examination; secondly, if any treatment is given, the Health Station physician is led into the false position of giving free treatment to the patient of another physician. If treatment is required, the private physician, the hospital clinic, or accident room, and the City physician are always available. In every such case, instructions must be given to take the child to his regular physician, as it is only by co-operating between the Health Station and other physicians that good results can be obtained.

It is considered inadvisable to attempt to standardize the methods of feeding, but in general it is recommended that breast feeding be continued till the baby is six to nine months of age. It is recommended that babies artificially fed shall be given sterilized milk up to one year of age and after that should receive a pasteurized milk, preferably of the grade "A" standard.

Cod liver oil is recommended for all babies.

It is recommended that mothers be advised to have their babies vaccinated against small-pox at two months of age and immunized against diphtheria at six months of age.

It is recommended that between the second and third birthday the child begin regular attendance at the office of a private dentist or at a dental clinic.

Rules for Nurses

The Child Health Station nurses shall co-operate closely with the private physicians by refusing admittance to any child showing symptoms of illness and instructing the mother to take the child to her regular physician at once.

The Child Health Station nurses shall do their utmost to see that the advice and instructions of the station physician are carried out in the home.

No nurse shall prescribe or change a formula *except in emergency* and shall then get in touch with the family physician or Health Station physician concerning it.

The nurses may advise mothers to give their babies a little zweiback, cereal and soup after four months and strained vegetables after five months of age. They may advise orange juice, tomato juice and cod liver oil, or its equivalents to babies after five weeks of age not under the supervision of a private physician. (This applies only to normal babies.)

Nurses may strap a protruding umbilicus and refer the baby to a private physician or clinic.

In case of diarrhoea or vomiting, the nurse may advise the mother to omit feeding (substituting boiled water) and to consult a doctor immediately.

Nurses shall not advise medication of any kind.

THE CONGENITAL SYPHILIS*

By MAX J. EXNER, M.D.

NEW YORK, N. Y.

Congenital syphilis is one of the most serious and tragic menaces to human-kind. For the child the possibilities are that he may succumb to the spirochete in utero—perhaps the most fortunate result; that he may die soon after birth or after a miserable existence within the first two years of life; or that he may survive physically or mentally blighted, always with the prospect of late crippling or killing lesions. To the family the syphilitic child often brings the seeds of mental anguish, economic loss, family discord, disruption, or tragedy. The belief of some authorities that about 75 per cent of women bearing syphilitic children have contracted the disease in wedlock suggests that the family significance of the congenital infection is not only that of an ailing or defective child. It cuts at the very basis of marriage and family life. To the State every congenitally syphilitic child is a potential social tragedy, for the greatest asset of the State is its healthy, well-endowed children, and the sound basis of its structure is the happy, harmonious and effective family.

It is highly appropriate and urgent that in any discussion of congenital syphilis the major emphasis be placed upon prevention. The problem of preventing congenital syphilis is really a simple one. The means and skill for its accomplishment are within our hands. There is no phase of preventive medicine which we can approach with greater confidence or in which we may achieve more dramatically striking results. It is wholly a question of early diagnosis and prompt and adequate treatment of the syphilitic pregnant woman. If the diagnosis of syphilis in the pregnant woman can be made early and treatment begun by the middle of the period of pregnancy, a non-syphilitic child can be assured in almost all cases. Treatment is now rather generally available. There is nothing in pregnancy normally to contra-indicate anti-syphilitic treatment. Indeed, pregnant women tolerate it exceptionally well. Often a moderate amount of treatment serves to protect the child.

Dr. Laurent, at St. Etienne, France, has interesting data on 213 women studied before and after they had treatment. Of the pregnancies occurring without treatment, 73.5 per cent terminated fatally for the child; 26.5 per cent were alive at three months. Of those alive, it is probable that at least half will die in the first five years and that of those surviving infancy, only a few will be apparently normal.

With treatment, the pregnancies of these same women terminated in a result that stands in impressively striking contrast. Nearly 92 per cent were alive at three months; only 8 per cent terminated fatally for the child. And of those alive, it is probable that all will be healthy, non-syphilitic children. These results are but typical of those achieved by all who apply modern methods of diagnosis and treatment of syphilis in pregnancy.

The failure to diagnose syphilis in pregnancy is the outstanding shortcoming that blocks our full possible achievements in this aspect of preventive medicine. Obviously the problem calls for a blood test—Wassermann, Kahn or other recognized test —upon all pregnant women in hospitals, prenatal clinics *and in private practice*. The certain diagnosis of syphilis in pregnancy is quite impossible without the blood test. In 14 studies of a total of 58,000 unselected cases in 30 clinics there was revealed the presence of syphilis ranging from 3 to 23 per cent. These and similar data abundantly justify the routine blood test upon women in prenatal clinics.

The greatest reluctance to application of the blood test to all pregnant women is found among the private practitioners. This is the sector in the battlefront in which the conquest of this public health menace chiefly halts.

We cannot take time to discuss anti-syphilitic treatment of pregnant women in detail. It does not differ essentially from modern modes of treatment of syphilis in general. The arsenicals, together with the heavy metals, are used, their combinations and proportions being varied according to the time treatment is begun and to other needs of the patient. If treatment is begun late, a maximum proportion of the arsenicals early is called for. While treatment in all cases should be vigorous, it should not and need not be excessive, remembering that the kidneys are already carrying extra burdens in pregnancy.

It is now generally regarded as established that in almost all, if not all, cases the infection is transmitted from the syphilitic mother to the child in utero by way of the blood stream, through the placenta. It is a significant fact that syphilis may be

*Read before the Rhode Island Medical Society, June 1st, 1933.

transmitted from husband to wife and from mother to child in stages of their disease in which the blood Wassermann reaction is negative. The disease tends somewhere in its course to become latent and to remain so for periods ranging from months to many years without clinical evidence, in which periods the blood Wassermann may be positive or negative or vary between the two. Nevertheless, the male may, during this quiescent stage of the disease, in which he is likely to consider himself cured—if he is aware of his infection at all—infect his marital partner. Pregnancy exerts commonly a powerfully inhibiting effect upon even an acute syphilitic infection in the woman. In many instances the Wassermann reaction in such latency is negative. Yet the disease is potentially infectious as regards the fetus or child.

The duration of syphilis in the mother is probably an important factor in determining infection of the child. The more recent the infection of the mother the more likely it is that the infant will be infected.

The accumulated evidence points to the fact that in the majority of cases the fetus is infected during the latter half of pregnancy. The histologic changes in the placenta are found most frequently after the seventh month, and they have apparently not been described before the fifth month.

It is believed that the period in the pregnancy in which the fetus or child becomes infected, chiefly determines the outcome as to whether a dead or living child is to be born. The earlier in pregnancy the fetus becomes infected, the greater is the likelihood of the child being born dead. It is probable that children born alive, and especially those in whom clinical symptoms of syphilis do not appear for some months, are those infected late in the pregnancy. When the infection reaches the fetus or child in utero, there results quickly a generalized spirochetaemia to the virulence of which the immature tissues and organs offer little resistance. The earlier in pregnancy the infection occurs, the more advanced is the destructive process likely to be at term, if not complete earlier.

Studies among older children show a much lower prevalence than among infants of the same social strata, this fact being accounted for probably by the high infant mortality caused by syphilis. In one of the Jeans-Cooke studies of 5,185 infants and children attending an out-patient clinic in St. Louis, syphilis was diagnosed in 2 per cent. When, however, the group was classified according to age, the percentage among the infants was 4.9 and among the older children, 1.5. Stokes states that the incidence of congenital syphilis in the child population as a whole, based upon a wide variety of estimates, ranges from 3 to 5 per cent.

As to the family effects of congenital syphilis, Jeans and Cooke derive the following summary results from their own studies and those by others among families similarly selected:

> Approximately 25 per cent of all the pregnancies in untreated syphilitic families resulted in miscarriage or stillbirth. (Doubtless not all caused by syphilis.)
>
> Approximately 20 per cent resulted in living births, the children of which later died.
>
> Approximately 40 per cent of the pregnancies resulted in children who were living and syphilitic at the time of the survey.
>
> Approximately 15 per cent of the pregnancies resulted in children who were living and non-syphilitic.

We will note briefly the early manifestations of congenital syphilis. In congenital syphilis, there is no "primary" stage, as in the acquired form. The infection is generalized from the beginning. The "early lesions" of congenital syphilis which appear in infancy correspond to the secondary lesions of acquired syphilis and the "late lesions" of congenital syphilis which appear in childhood or adolescence correspond to the tertiary lesions of acquired syphilis. The term "fetal syphilis" is applied to the lesions which develop before birth and are present in stillbirth or in the child at birth.

Most syphilitic infants show no visible evidence of the disease at birth. When it does manifest itself at birth, it usually denotes a virulent infection. Stokes says, "The sooner the symptoms appear the more serious the prognosis." In about two-thirds of syphilitic infants, clinical manifestations appear within the first two months, and in but few cases are they delayed beyond six months. In some cases they may not appear for a year or more. Only rarely do clinical signs appear before the Wassermann reaction in the blood becomes positive.

The lesions of infantile syphilis are chiefly those of the skin, mucous membranes, bones and nervous system. Occasionally the eye is involved. As in the secondary stage of acquired syphilis, so in the

congenital form the lesions of the skin and mucous membranes predominate. In addition to these about 20 per cent of patients present bone lesions and about 5 per cent lesions of the nervous system.

After the disappearance of the early skin lesions there may take place a recurrence of lesions of different types, chiefly condylomata, mucous patches, granulomata and papular and serpiginous syphilids. In these lesions spirochetae may be demonstrated.

The manifestations of late congenital syphilis, corresponding to the tertiary lesions of acquired syphilis, are eye lesions, mostly keratitis; neurosyphilis; bone and joint syphilis; gummata and deafness. They occur mainly, though not exclusively, between the ages of two and fifteen.

Interstitial keratitis is by far the most frequent of the late lesions, associated often with iritis and chorioretinitis and other pathologic conditions of the eye. In the St. Louis group, 63 per cent of the children over five years of age with clinically active syphilis had keratitis. In the majority of cases the condition is bilateral.

Syphilis of the joints occurs at all ages, but most frequently between the ages of five and ten. The knee is the joint most frequently involved and when it is, the condition is in most cases bilateral.

Bone syphilis is chiefly of two types: The most common is osteoperiostitis, a diffuse hyper-plastic process. Less common are localized gummata. The most characteristic feature of osteoperiostitis is a diffuse thickening of the periosteum and gradual thickening of the underlying bone. The saber shin, one of the common stigmata of congenital syphilis, illustrates the result of this inflammatory process. Frequently, the condition is accompanied by pain which tends to be more severe at night.

Gummata also are most common in the tibia. In contrast to the hyperplasia of osteoperiostitis, gummata are destructive lesions, sometimes to the extent of causing pathological fracture. They tend to ulcerate to the surface. The process is decidedly chronic and resistent to treatment, producing some of the most persistently Wassermann-fast cases.

Gummata of the soft parts occur much less frequently. They are located most often about the nose and throat.

Deafness in syphilitic children is relatively uncommon. It is found most frequently between ten and fourteen years of age. It occurs much more frequently in females than in males. The condition is always bilateral. When deafness has become total, the condition is permanent.

Among all the manifestations of late congenital syphilis, neurosyphilis is by all odds the most important. By the time neurosyphilis is clinically recognizable, the damage already done is usually irreparable.

It is to be assumed that in the early general spirochaetemia which occurs in every syphilitic infection by way of the blood stream, spirochetae reach the nervous system. Yet not all syphilitic individuals develop neurosyphilis. What factors determine the localization is not yet understood. It is true, however, that active syphilis in one part of the body tends to inhibit activity in other parts. Patients with manifest neurosyphilis frequently have little evidence of syphilis elsewhere, and vice versa.

Some present-day authorities believe that involvement of the nervous system in hereditary syphilis is more frequent than many accounts would indicate.

A much greater prevalence of neurosyphilis in white children as compared with Negro children is noteworthy. In adult neurosyphilis similar preponderance of incidence among whites as compared with Negroes is found. Whatever other factors may enter in to influence the localization, it is difficult to escape the conclusion that there exists a definite predisposition to neurosyphilis in the white race.

Infants with neurosyphilis do not always show a positive spinal fluid Wassermann in the early months of life. The positive reaction may at times be delayed until after the third month. In general the conclusion seems to be justified that the involvement of the nervous system, in children with congenital syphilis, occurs during the early spirochaetemia *or not at all.* This fact is important in its bearing on diagnosis, prognosis and treatment.

Some authorities of today believe that all neurosyphilis begins as a vascular process. Since the infection occurs by way of the blood stream the early lesions are in and about the blood vessels of the meninges. From these sites the infection tends to progress into the parenchyma of the brain and nervous tissues. Motor paralysis and mental deterioration are usually the most prominent indications. Meningitis, hydrocephalus, convulsions and the various forms of paralyses and epilepsy are the conditions most commonly described.

Optic atrophy due to syphilis may occur any time in childhood, though this lesion is rare.

In addition to these more or less localized lesions, a more diffuse degeneration of the cortex often occurs in which the clinical manifestations are chiefly mental. Syphilitic dementia and paresis are common classifications. Tabes dorsalis occurs but it is a relatively infrequent manifestation of congenital neurosyphilis. No detailed treatment of the various types of neurosyphilis can be undertaken in this paper.

Latency of the infection in congenital syphilis undoubtedly occurs much more frequently than is generally suspected. The actual incidence could be determined only by routine blood examinations, which few are making. Apparently few infections in young children are being diagnosed except those with manifest lesions. In the St. Louis series more than half of the syphilitic children beyond infancy manifested no signs of clinical activity when the child was first seen. Practically all syphilitic infections in children become latent at some period during the disease and the period of symptom-free latency may continue for a number of years.

Many children with latent congenital syphilis, as well as those with active lesions, manifest the "scars" of earlier syphilitic activity known as stigmata which, while not all strictly pathognomonic, render the case highly suspicious. The stigmata appear mostly in later childhood. Hutchinson's teeth, the mulberry molar, rhagades and the saber shin are the most definitely pathognomonic of syphilis.

While laboratory tests must be relied upon to confirm the identification of congenital syphilis, the recognition of the clinical signs remains of the utmost importance. The more common ones have been sketchily reviewed. The prevalence of latent stages in the parents suggests that not too much emphasis be placed upon securing a history of syphilis in the parents. A history of syphilis in one member of the family calls for Wassermann tests upon all the members. While in many cases the clinical manifestations of congenital syphilis are almost unmistakable, they may at times be confused with non-syphilitic affections, hence the diagnosis must be confirmed by laboratory tests. In neurological involvement the laboratory tests must be almost wholly relied upon. Fortunately in such cases the blood Wassermann is almost always strongly positive, and when it is not, the spinal fluid will show the characteristic changes. Indeed, strongly positive Wassermann reaction is generally characteristic of untreated hereditary syphilis, and the reaction does not tend to become weaker or spontaneously negative during childhood as it tends to do in syphilis of the adult. In the first two months of life syphilitic children may give negative reaction, the fixing substances not yet having developed in the blood, and non-syphilitic infants may give a positive reaction, the fixing substances from the blood of the syphilitic mother being transmitted to the healthy infant through the placenta. After two months syphilitic infants will usually give positive reactions and non-syphilitic infants negative reactions. In congenital syphilis the positive blood reaction tends strongly to persist even during the prolonged and intensive treatment, in contrast to acquired syphilis in the adult in whom the blood reaction is much more amenable to modification.

The prognosis of congenital syphilis is most grave in infancy. The disease seems to cause a decreased general resistance to pyogenic infection, hence many die from secondary intercurrent infection. In older children the mortality is confined mainly to those having neuro-syphilis.

Clinical symptoms usually disappear promptly under adequate treatment, with the exception of certain neurological cases, and of interstitial keratitis and arthritis which may give way slowly. It has been already stated that once clinical signs of damage to the nervous system have appeared, even adequate treatment is not likely to do more than arrest its further progress.

Space forbids any detailed discussion of treatment of congenital syphilis. The drugs employed are the same as those used in the treatment of syphilis in the adult, namely, the arsenicals together with mercury, bismuth and the iodides. While possibly less active a drug than arsphenamine and neoarsphenamine, sulpharsphenamine has come into favor in the treatment of congenital syphilis because of certain advantages. It is easily prepared for injection; it can be given intramuscularly or subcutaneously; it is comparatively non-irritating when so given; and in solution it is the most stable of the arsenicals. Tryparsmid, while of low spirilicidal action, is of advantage in cases of neural involvement because of its greater power to penetrate the nervous system. It may be given intramuscularly or intravenously, the latter route being preferable. The drug is to be used only supplementary to other antisyphilitic treatment.

While the courses of treatment of congenital syphilis adopted by various authorities have certain fundamental ideas or principles in common, each has his own modifications based upon his experience and convictions. As an example of a treatment regime based upon long and wide experience we present that of Jeans and Cooke.

A. *Routine Treatment for Ordinary Cases*

Especially in infants with early syphilis.

1. Mercuric chloride intramuscularly once weekly.

2. Sulpharsphenamine once weekly during the first three weeks of course.

In late congenital syphilis or in Wassermann-fast cases, the following additional bismuth therapy is added:

3. Bismuth intramuscularly once weekly during the last six weeks of course.

The sulpharsphenamine is given on the same day as the first three mercury injections and the bismuth simultaneously with the last six doses of mercury.

B. *Intensive Treatment Given at Intervals.*

This is intended particularly for patients who cannot maintain continuous treatment because they reside at a distance and are able to report for therapy only at intervals. It consists of the following:

1. Sulpharsphenamine every second day for three doses.

2. Bismuth or bichloride of mercury intramuscularly co-incidentally with the first and third sulpharsphenamine treatments.

This routine is repeated every six to eight weeks and in the intervals mercury by mouth is prescribed.

C. *Tryparsamid Treatment for Late Neurosyphilis*

1. Sulpharsphenamine once weekly for the first three injections.

2. Tryparsamid once weekly for the next six weeks.

3. Mercuric chlorid or bismuth intramuscularly each week during the course, the two drugs being employed in alternate courses.

It will be of interest to note the treatment results accomplished during a ten-year period by Jeans and Cooke, employing essentially the treatment regimes just described.

Of the group of 401 infants with congenital syphilis under one year of age, 125 received treatment for six months or more. Of these 90 remained cured at least three years; 35 were not serologically cured.

Of the group of 542 children over one year of age, 66 received treatment more than six months but less than a year. Of these 8 were cured and 58 were not serologically cured. Of the one hundred and ninety-three who were treated more than a year, 85 (44 per cent) were cured; 108 were not serologically cured. These data throw forceful emphasis upon early and adequate treatment. The earlier treatment is begun the more favorable is the prognosis. Delay of treatment into the second year of age very greatly diminishes the chances of recovery. Jeans and Cooke say, "A minimum of nine months of treatment (four courses) for infants and twice that amount for older children is advisable. After clinical and serological cure, the child should have a physical examination and blood Wassermann test every six months for several years."

Schamberg and Wright say, "Certain it is that treatment of syphilis in a child should begin as soon as the disease is discovered. This treatment should be continued vigorously until there are no signs or symptoms of the disease and until the Wassermann reaction is persistently negative. After this, treatment need not be intensive, but should be continued at intervals until the child is fully grown."

In closing we return to the emphasis upon prevention, (a) the outright prevention of congenital syphilis by the timely diagnosis and treatment of every syphilitic pregnant woman. In view of the frequency of negative serology in these cases careful attention to history of infection as well as to clinical manifestations and blood tests is important. (b) The prevention in syphilitic infants of the killing or crippling consequences of the infection by early diagnosis and the earliest possible and adequate treatment. In acquired syphilis in the adult, diagnosis in the primary stage followed by immediate and adequate treatment offers a permanent arrest or cure of the disease in virtually 100 per cent of cases. While in congenital syphilis early diagnosis and treatment does not offer quite so hopeful a prognosis, we have already shown the enormous advantages of the procedure and of the striking dangers of every delay.

The means for the prevention of congenital syphilis is in the hands of the medical profession. Shall we remind ourselves that opportunity is the measure of responsibility?

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EDITORIALS

REGRETTABLE OVERSIGHTS

In a recent contribution in the *Journal of the American Medical Association,* a correspondent* decries the too frequent diagnosis *by exclusion* of minor psychoses, especially hysteria and neurasthenia, to account for physical symptoms of obscure origin. He feels that this method of diagnosis not only postulates more adequate and absolute criteria for the conditions excluded than are at present at our command, but also implies lack of positive findings for the condition to which the symptoms are attributed. In this opinion we heartily concur.

We recall most vividly a case in point. A young woman who some time before had had an "interval" appendectomy performed at another institution, was admitted to a local hospital complaining of severe abdominal pain. Since her vital organs were all normal, and the common laboratory procedures gave negative results, it was concluded after roentgenographic investigation of her gastrointestinal, biliary, and urinary tracts that her symptoms were due to adhesions following the first operation. Because of the persistent and disabling

*Stevens, George S.: J.A.M.A. 101:876 (Sept. 9) 1932.

character of her pain, an operation for lysis of adhesions was at length resorted to. After this operation her pain persisted for some time, but eventually cleared up and she was discharged. A short time later, however, she was readmitted with exactly the same complaint. This time, because she evinced considerable emotional instability, she was seen in consultation by the neurological service, who under pressure concurred in the diagnosis of hysteria. From the moment she was tagged with that diagnosis no further attention was paid to her symptoms, which gradually subsided and she was again discharged. Subsequently she was readmitted on several occasions with identical attacks, but the fateful diagnosis still clung to her, and nothing further in the way of investigation or treatment was accomplished. Finally she was admitted to another hospital, where, after a dispassionate and unbiased review of her history, a third operation was performed and a diseased gall-bladder containing calculi was removed—with complete relief of her long-standing complaints.

We could go on multiplying instances in which an ill-advised diagnosis of hysteria has stifled further diagnostic investigation and subjected the patient to much unnecessary suffering, but this single illustration is ample support for our thesis. Far too often the embarrassed diagnostician admits defeat by consigning a patient to the limbo of the minor psychoses when persistent study would reveal an organic basis for his symptoms. We trust that in the future this practice may become increasingly infrequent.

ESTIMATION OF AND METHODS OF MEETING SURGICAL RISKS AND POSTOPERATIVE COMPLICATIONS IN SURGICAL DISEASES OF THE BILIARY TRACT*

By FREDERIC V. HUSSEY, M.D.
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During the past ten to twelve years a vast amount of experimental work has been done and clinical material studied concerning liver function and the cause or causes of postoperative hemorrhage in jaundice. Because of the knowledge gained therefrom, we have been very much aided to a more intelligent and scientific handling of patients suffering from gallbladder and biliary duct disease. Because of a more thorough understanding of the factors which influence liver function, it is generally conceded, I think, that our operative results in those cases have been much improved. It has been estimated that the immediate mortality has been reduced from 6-7% to the neighborhood of 2%. In view of what has been gained in our knowledge, it appears that one cannot urge too strongly the importance of preoperative study of liver function in each individual case to determine as accurately as possible the operative risk. This should pertain not only to jaundiced cases, but to those cases also which, on the surface of things, apparently are in good condition for operation. If we will only carry out routinely such a study, we undoubtedly will remove from our list of unfavorable results, many cases the loss of which at the time will seem so inexplicable.

It is the purpose of this paper to take up only the type of biliary tract disease which presents the opportunity of study and not dwell upon the acute type which demands immediate or quick operation.

The functions of the liver are undoubtedly many, but one of the principal is that of storing up glycogen in the liver. Another very important function is the function of detoxication, and in this function glycogen plays a very important part. The functions of excreting bilirubin in the bile and the manufacture of fibrinogen are also important. These functions are, of course, interfered with by anything which reduces liver capacity.

In studying the experimental work which has been done, one in many instances is struck by the great discrepancy in results, but certain factors do stand out which show rather conclusively that a pronounced reduction in liver function adds considerably to the risks of operation.

It is a well known fact that disease of the gallbladder and biliary ducts produces an infection of the liver which probably takes place through the lymphatic system. It has also been established that infection of the liver of sufficient severity or length of standing reduces liver function.

Damage to the liver is also caused by any obstruction to the flow of bile. This damage results in a decrease of the stored-up glycogen, which substance, as said before, plays a great part in the detoxicating ability of the liver. It had been known for some time that certain poisons, such as chloroform, phosphorus, carbon tetrachloride, etc., re-

*Read before the Rhode Island Medical Society, June 1st, 1933.

sulted in decrease of glycogen in the liver, and conversely, that a reduced liver glycogen content rendered animals more susceptible to those same poisons.

To quote Davis, "a liver well stored with glycogen is refractory to large doses of those poisons."

It is contended that glycogen acts in three principal ways:

1st—Helping to neutralize many exogenous and endogenous toxins.

2nd—Helping to repair the injured liver as demonstrated by Davis, Hall and Whipple.

3rd—Helping to reduce the prolonged time of coagulation in jaundice.

It has been shown that under proper conditions the liver has a rapid power of regeneration. In experiments, Davis, Hall and Whipple claim that a high carbohydrate diet would cause a regeneration of liver tissue at about the rate of 100 grams a day. It has also been shown that in animals who have had a total hepatectomy that a high carbohydrate diet will postpone for some time fatal results.

In trying to devise methods of determining the degree of liver function, much work has been done which has resulted in the generally acknowledged value of three tests for that purpose. These tests are the so-called hepatic function test of Rowntree and Rosenthal, the icteric index test and the Van den Bergh test.

The Rowntree and Rosenthal test is based on the ability of the liver to excrete the substance—bromsulphalein, which is practically excreted no other way. The degree of liver function is determined by the degree of elimination from the blood of this substance in a given length of time.

Graham recently has been using a preparation of phenolte traiodophthalein which he claims is better in that a larger amount of the preparation can be given for the purpose of obtaining X-ray films of the gallbladder and also for the determination of liver function. He claims that in order to get the best results in determining liver function it is necessary to put a sufficient amount of work upon the liver to make the test adequate.

The icteric index test and the Van den Bergh test are based upon the presence of bilirubin in the blood serum. The value of these tests in frank jaundice has been recognized for some time, but possibly one of the most important features of these tests is the determination of latent jaundice, which means a content of from 6 to 15 milligrams of serum bilirubin to the 100 c.c. of blood. The Van den Bergh test is also applied for the purpose of determining whether a jaundice is an intra or extra hepatic type, and thus is of considerable value in determining whether jaundice is of the obstructive or hemolytic type.

In general it may be said that a sustained serum bilirubin of more than 15 milligrams to the 100 c.c. of blood means considerable injury to the hepatic cells. This is especially supported if the coagulation time of the blood is considerably prolonged. In cases in which there is a retention of 50% of phenotetraiodophthalein in the half hour, Graham refuses operation because of the undue surgical risk. Others who have used the Rowntree-Rosenthal test are also governed in their judgment of operability by the amount of retention of bromsulphalein at the end of the first and second hours. All of these cases showing high retention tests should be subjected to preoperative treatment for the purpose of improving the function of the liver.

The most efficacious method of treatment under those conditions is feeding, in one way or another, a high carbohydrate diet.

Beddard in 1908 was the first to advocate the treatment of hepatic disease by dextrose. In 1915 Opie and Alford also demonstrated that dextrose lessens susceptibility of rats and dogs to necrosis of the liver. Others also, such as Bockelmann, Bloch, Baehr, and Klemperer, showed beneficial effects of administration of dextrose in such conditions as acidosis of pregnancy, subacute yellow atrophy of the liver, arsphenamine injury, mushroom poisoning and chronic cirrhosis of the liver. This protective action of the carbohydrates is based on the ability of the liver to store up glycogen from them. It has been said that a damaged liver has lost its ability to store up glycogen, but it has been contended by some investigators that the lowering of glycogen in the liver was more likely due to the inability of the liver to manufacture sufficient glycogen from non-carbohydrate sources and because there is not enough carbohydrate available for storage as glycogen. The only other place of storage of glycogen to any amount is the muscles and heart and for some reason this storage is only available to a small degree for replacement of the decreased glycogen of the liver.

Patients are put to bed and put upon large doses of carbohydrates by mouth preferably, if they can

tolerate it, or in case of lack of toleration by mouth, a 10% solution of glucose can be given intravenously. The advantage of giving carbohydrate by mouth is that it is utilized as easily, if not more so, by the liver for the storage of glycogen and larger amounts can be given, even as high as 300 grams per twenty-four hours. If glucose is given intravenously, 100 grams in twenty-four hours should be administered. Glucose by rectum is of no particular value because very little of it is taken up by that way. As Graham says, under this method of treatment, patients who have had an original retention of as high as 90% in the half hour, in two to three weeks' time have had an improvement indicated by a retention of from 30 to 40% in the half hour. Such patients can be operated on with a marked degree of safety.

The question of the use of medical drainage of the biliary tract in these cases is one which is interpreted variously by various surgeons. While the procedure has been reported to produce excellent results by Lyons and others, a large number of surgical clinics have discarded it preoperatively as a method of treatment and are using it principally for diagnostic purposes.

However, I personally have seen cases in which preoperative treatment, consisting of feeding of a diet high in carbohydrates plus a course of medical drainage, has resulted in great benefit. Whether this is due to the effect of the high carbohydrate diet or to a combination of the two I have not been able to determine, but I believe that medical drainage may play some part, even though it may be small.

To my mind, the most important role that the Rehfus or Levin tube plays is that of establishing continuous drainage of the upper gastro-intestinal tract, postoperatively, in those cases which develop a condition which might be called liver uremia with toxic vomiting. In those instances, I am thoroughly persuaded that the Rehfus or Levin tube, together with glucose intravenously, is a life-saving measure.

The question of jaundice of the obstructive type in cases requiring operation is a very important one. The exact process of the production of jaundice is still somewhat indefinite, but it is based on the theory of a breaking down of the hemoglobin of the red cells into bilirubin, principally by the reticulo-endothelial system and the removal of the bilirubin from the blood stream through the polygonal cells of the liver and the excretion of it through the bile. The outflow of the bile being obstructed results in a return of the bilirubin to the blood stream, principally through the lymphatic channels and somewhat directly through the blood stream. When the sustained content of bilirubin in the blood reaches a sufficiently high point, it becomes deposited in the tissues and gives rise to the condition of jaundice. It is in the condition of jaundice that the Van den Bergh reaction may have its particular application because this test permits of a quantitative and qualitative estimation of the bilirubin.

It would appear that bilirubin in passing through the polygonal cells of the liver undergoes some type of modification, possibly a simplification, which gives a different reaction with the diazo reagent of Ehrlich than the bilirubin which has not passed through those cells. This test in many instances is of great assistance in determining whether a type of jaundice is hemolytic or obstructive. This applies to cases of so-called "silent stone" in the common duct, which cases are considerable in number. Lahey claims that stones of the common duct are much more common than we realize, and that in the year of 1931, he opened the common duct in 41% of his cases and found stones in 19% of those.

Outside of the amount of liver damage done and the decrease in liver function caused by stones in the common duct producing jaundice, the great risk in jaundiced patients to be operated upon is the risk of postoperative hemorrhage. The reason for the tendency of jaundiced patients to bleed is not thoroughly understood.

According to Wangensteen, there may be three factors which play a part in the hemorrhagic tendency in jaundice:

(1) The presence of bile pigment and bile acids in the blood.

(2) The functional deficiency of calcium due to the increase in bile salts and bile acids in the blood and urine.

(3) A variation in the prothrombin and fibrinogen contents of the blood.

None of these theories have been proven.

A vast amount of work has been done to determine the cause of hemorrhage in jaundice based principally on a study of the calcium content of the blood, also somewhat on the fibrinogen content of the blood. It is pretty well understood that the liver is the principal source of the fibrinogen in the

blood, and it has been suggested that a damaged liver being unable to manufacture fibrinogen in sufficient amounts, may cause the tendency to bleed. This idea is hardly supported by experimental work. It has been shown that a damaged liver may, for the time being, manufacture an excess of fibrinogen.

On the other hand, others like Peters and Van Slyke, have admitted that severe injury to the liver in many cases is attended with a decrease in fibrinogen, and most of the work tends to show that when there is a sufficient loss of liver tissue because of failure in the demands of the body, fibrinogen decreases. They do not, however, think that the decrease in fibrinogen parallels the amount of liver damage. Efforts have been made to determine the question of liver function by the amount of fibrinogen in the blood, but the results have been so inconclusive that they cannot be relied upon.

As I said before, most of the work that has been done is in an attempt to account for the tendency to hemorrhage by the lack of available calcium. It is contended by some that the calcium enters into a combination with bile pigment and cannot be utilized in its role of sustaining a normal coagulation time. The results of this work, also, have been so inconclusive that it is generally recognized now that neither the time of coagulation or the bleeding time can be accepted as an index of the risk of postoperative bleeding. Neither does the degree of jaundice nor the length of time of jaundice give us any satisfactory information on this subject. This would throw out the icteric index and the Van den Bergh tests as being of any value. It has been shown that calcium in itself does play some part in liver regeneration and probably if it is of any value, it is of value preoperatively in helping to restore liver function and for this purpose has been and is being given by various surgeons.

After all, normal coagulation time is related to normal liver function. So it may be that the chief factor in the bleeding tendency in jaundice is due to the presence in the blood stream of abnormal products caused by liver destruction and decrease of liver function.

Interesting work has been done by Linton in the way of being able to foretell the risks of hemorrhage by the sedimentation test. This work has been supplemented and carried out in the Lahey Clinic and it seems as if it may be a valuable means, not of being able to definitely foretell in which case bleeding will occur, but in establishing the tendency to bleed. As this test is influenced by certain factors such as (1) serious infection, (2) fever, (3) extensive malignancy, (4) pregnancy, (5) anemia, etc., it should be interpreted accordingly. Fever being the principal complicating factor, the rate should be taken during an afebrile period. Linton, I think, believes that he has been able in this way to definitely foretell the risk of hemorrhage, while Clute and others of the Lahey Clinic have found instances in which rapid sedimentation rate has been followed by bleeding, and cases of slow sedimentation rate which have not bled.

Cases of jaundice, preoperatively, in which there may seem to be, as proved by the sedimentation test, a tendency to bleed, can be prepared by feeding them carbohydrates by mouth, or by giving them intravenous solutions of glucose and calcium to improve liver function and by giving them direct blood transfusions. Transfusion may be done the day before operation or the morning of operation. In cases of actual bleeding, postoperatively, calcium and various other preparations fail too often to permit much reliance being placed upon them. The one and only procedure which will give the best results is blood transfusions, and even in some cases these will fail.

The question of kidney lesions enters into the picture both before and after operation. While it is very important to have a complete check-up on the kidneys before operation with the idea of determining any degenerative changes present, we find many cases in which there are no manifestations of a diseased kidney pre-operatively, but which following operation are thrown into a profound degenerative process resembling uremia. This condition has been very aptly called "liver death." It is caused probably by some toxin produced in a diseased liver which acts directly on the kidneys. Autopsies on these cases have shown very pronounced degenerative changes in those organs.

Mann of the Mayo Clinic has definitely shown that very profound degenerative changes have taken place in many cases in the liver parenchyma in the bed of the gallbladder which has been removed. His idea is that this may be the seat of manufacture of powerful toxins which have been responsible for the kidney lesions. As a result he has suggested that it might be better not to suture over and close the gallbladder fossa but to leave it open for the purpose of better drainage.

The hepato-renal syndrome as described by Schutz, Helwig and Kuhn is characterized by rise of temperature and pulse rate about the fifth or sixth day, accompanied by abdominal distention and progressive oliguria with the appearance of albumin, casts and often red cells in the urine. With the increase in oliguria the patients lapse into delirium and then coma, the nitrogenous elements of the blood increase progressively and the urinary nitrogen becomes greatly diminished. Nausea and vomiting, often severe, and mucous surface bleeding, often becomes a prominent feature. Blood in large amounts is often found in the stools and the vomitus. The clinical picture then progresses to uremia with generalized low grade edema and almost anuria. They go on to state that a careful analysis of these cases suggests that the primary factor in the syndrome is due to a diseased liver and that kidney damage resulting is probably brought on by toxic products elaborated in the liver.

In addition to the customary method of treatment of such an infection of the kidney, they emphasize the great advantage of supplying the liver with glycogen by large amounts of sugar preoperatively on the theory that the detoxifying action of the liver is greatly increased when the hepatic cells have an ample glycogen storage.

Those who have had much experience in biliary tract surgery have, I think, been impressed considerably by the frequent association of myocardial changes in the heart accompanying diseases of the gallbladder and bile ducts. This, of course, carries with it also an associated diseased condition of the liver itself. Careful examination on many of these cases, in fact on most of them before operation, fails to reveal any definite underlying heart condition which would predispose to trouble postoperatively, and yet, on the second or third day following operation, and oftentimes during operation or immediately afterwards, serious heart symptoms are observed. It is oftentimes difficult and practically impossible to determine ahead of time in what cases to expect such a complication.

It seems to me that Marvin has stated the problem very well when he says, "In determining fitness for operation, a history of the patient's activities and symptoms is far more valuable than is physical examination, so far as the heart and circulation is concerned. If the individual is able to indulge in moderate activity without symptoms, no concern need be felt about the ability of the heart to sustain the very slight extra work entailed by a surgical operation, provided the anesthetic is properly administered."

He goes on to say that there is an important exception to this statement. There are several manifestations of heart disease that are notoriously apt to lead to sudden death, even with the patient at rest and apparently in fair health: syphilitic aortic insufficiency, complete heart block, aortic stenosis, and that form of heart failure known as angina pectoris. It is clear that patients with heart block or with angina will seldom be able to lead normal lives without symptoms. Therefore, the only important exceptions made to the statements above, are the syphilitic heart disease and aortic stenosis.

If there is early heart failure of the congestive type, attempts should be made to improve the state of the circulation by means of rest and digitalis before operation is performed. The presence of rales at the bases of the lungs is perhaps the best indication that such a procedure should be instituted. He also states that at present there is no acceptable evidence indicating that any useful purpose is served by the routine preoperative administration of digitalis to patients who do not have heart failure or auricular fibrillation. If the circulation is being normally maintained, it is impossible to improve it, and it has not yet been shown that the percentage of operative and postoperative complications is lowered by routine preoperative digitalization.

He also says, which I believe is a very correct statement, that the choice of a competent anesthetist is far more important than the choice of the anesthetic, and the greater the degree of heart failure, the more important this choice becomes.

Postoperatively, those cases which show heart disturbances respond best to digitalis treatment. There are many other complications which are met in biliary tract surgery, but these complications are not particularly prominent in this type of work as they are encountered following operations in general—such as pneumonia, atelectasis, etc. Therefore, a discussion of those complications will not be taken up.

In summing up—In cases of biliary tract disease in which operation is contemplated, too much emphasis cannot, I believe, be placed upon the attempt to determine the degree of liver function. If by function tests we can determine that there is considerable damage to the liver tissue, time should be

taken for treatment in order to bring about improvement. The best form of treatment in these cases is rest in bed with a diet rich in carbohydrates if they can be tolerated by mouth, or if not, glucose solution intravenously. As it has been suggested that calcium plays some part in liver regeneration, this substance may possibly be added with good effect to the carbohydrate diet.

In cases of jaundice, whether it be mild or severe, of short or long duration, the tendency to bleed postoperatively can be determined, judging from the results of Lindon, Clute and others, by the sedimentation test. This test will not tell us without failure in what case we will have bleeding, but it will apparently give us an idea as to what cases will have a tendency to bleed. To meet this postoperative complication, the best preoperative treatment is direct whole blood transfusions. Also, postoperatively, if bleeding does occur, this method of meeting it is still the best. Calcium apparently does not play much part in the control of this condition.

As to the postoperative complication spoken of as "liver death," there is apparently no way in which it can be foreseen. If it is met with, the method of treatment in vogue in acute kidney degeneration should be instituted, together with the routine treatment with glucose which, I believe, should be followed in all postoperative biliary tract operations. In those cases which are frequently seen postoperatively with almost constant vomiting of large amounts of foul fluid with symptoms which formerly may have been ascribed to acute dilatation of the stomach, but which probably are due to a toxic condition, I believe that the passage of either the Rehfus or Levin tube for the purpose of continuous drainage of the upper gastrointestinal tract is a life-saving measure.

MISCELLANEOUS

DIATHERMY TREATMENT OF DEMENTIA PARALYTICA: MICROSCOPIC CHANGES IN TREATED CASES

Walter Freeman, Theodore C. Fong and S. J. Rosenberg, Washington, D. C. (*Journal A. M. A.*, June 3, 1933), state that the substitution of diathermy for malaria in the treatment of dementia paralytica has, in their hands, met with almost complete failure. There were twenty-eight deaths in a series of fifty patients over a period of four years. While they admit that the patients were not of the best type, that the treatment may not have been sufficiently prolonged and that the use of arsenical therapy as an adjuvant was not pushed to the possible limit, the fact remains that, in comparison with the results from malaria, the benefit to the patients has been far from impressive. The difference becomes more notable as the period of time elapsed after the treatment becomes longer. In their opinion the early reports on the diathermy treatment of dementia paralytica were published after too short a period of observation, especially since even now it is less than five years since Neymann and King and Cooke first began their experiments.

TYMPANIC PLEXUS NEURALGIA: TRUE TIC DOULOUREUX OF THE EAR OR SO-CALLED GENICULATE GANGLION NEURALGIA: CURE EFFECTED BY INTRACRANIAL SECTION OF GLOSSOPHARYNGEAL NERVE.

Frederick Leet Reichert, San Francisco (*Journal A. M. A.*, June 3, 1933), reports the case of a patient in whom a preoperative diagnosis of geniculate ganglion neuralgia was made, but who at operation was found to have the tic-like pain consistently reproduced only when the glossopharyngeal nerve was touched. It was concluded, therefore, that the patient had a tic douloureux of the tympanic branch of the glossopharyngeus (Jacobson's nerve or plexus), and since her symptoms were identical with those of the patient of Clark and Taylor, their case undoubtedly was likewise a Jacobson's nerve neuralgia. From the study of this case and a review of the literature, the author concludes that there are at least two types of neuralgia or tic douloureux of the glossopharyngeal nerve. Over forty cases have been reported in the literature of the ordinary or complete glossopharyngeal neuralgia, which is characterized by paroxysmal attacks of lancinating pain, usually starting in the tonsillar region or base of the tongue and frequently radiating to the ear, often accompanied by salivation and induced by eating, talking or swallowing or by other movements of the pharynx and tongue. Partial involvement of the glossopharyngeus or Jacobson's nerve tic douloureux is a rare neuralgia of the tympanic branch of the glosso-

pharyngeal nerve which has been regarded in the literature as a tic of the sensory filaments of the seventh nerve and is more commonly termed geniculate ganglion neuralgia. It is characterized by paroxysms of stabbing pain in the external auditory meatus, often associated with other pains in the face and postauricular region, not induced by talking, eating or swallowing, and not associated with salivation. Intracranial division of the glossopharyngeal nerve has cured both types of these neuralgias.

CONGENITAL ATRESIA OF ALIMENTARY TRACT: DIAGNOSIS BY MICROSCOPIC EXAMINATION OF MECONIUM

Sidney Farber's, Boston, (*Journal A. M. A.*, June 3, 1933), simple procedure for the early diagnosis of congenital atresia of the esophagus and intestine is based on the constant presence in normal meconium of cornified epithelial cells, which are derived from the skin of the fetus and which are swallowed with the other amniotic sac contents to contribute to the formation of meconium. Microscopic examination of smears of normal meconium, when treated with ether, stained with Sterling's gentian violet and decolorized by acid alcohol, reveals large numbers of cornified epithelial cells. All other cells are decolorized by this method, thus permitting easy recognition of cornified cells. The absence of cornified epithelial cells in smears of meconium is proof of the existence of congential atresia of the alimentary tract.

TRICHOMONAS VAGINITIS IN CHILDREN

During the past two years, Lester E. Frankenthal, Jr., and Alfred J. Kobak, Chicago (*Journal A. M. A.*, June 3, 1933), observed four cases of Trichomonas vaginitis in children. All the patients were between the ages of 11 and 14 years. Three of these cases were seen before the onset of menstruation. In each patient a history of profuse, irritating vaginal discharge was elicited. On examination, the authors found in all four a bubbly, foamy, gray to green discharge which bathed the external genitals and irritated the surrounding skin. Vaginoscopic examination showed the vagina to be definitely affected, and the summits of the rugae contained small punctate hyperemic spots. The latter were especially noted around the cervix. The diagnosis of this condition is easy to make. Routine vaginoscopic and hanging drop examination should be made in all suspected cases. The local treatment in children is very difficult and unsatisfactory because of the virginal introitus and infantile state of the genitals. Improvement of local and general hygiene together with a well balanced diet is beneficial. The one patient limited to these measures made the most satisfactory progress. The course of this infection is prolonged in childhood and it is more difficult to effect a cure than in adults.

ROENTGEN VISUALIZATION OF LIVER AND SPLEEN WITH THORIUM DIOXIDE SOL, WITH PARTICULAR REFERENCE TO PREOPERATIVE DIAGNOSIS OF CARCINOMATOUS METASTASES TO THE LIVER.

Lester G. Ericksen, Dubuque, Iowa, and Leo G. Rigler, Minneapolis (*Journal A. M. A.*), state that hepatosplenography is of value as a routine preoperative examination in malignant cases. The authors have used this procedure in eighty-two clinical cases of various types without apparent harm and with gratifying results. It has been found to be of great value in gastro-intestinal malignant growths preoperatively. In the interpretation of roentgenograms, when in doubt a negative diagnosis is made. Certain phases of this procedure, which heretofore have not been emphasized, are: 1. The advantage of delayed elimination in the follow-up examination for the demonstration of the development of metastases. 2. The danger of delayed radioactivity of thorium after several years. 3. Its particular value in preventing needless surgery in cases of malignant growths of the gastro-intestinal tract. 4. The fact that roentgenograms should not be taken sooner than twenty-four hours following the last injection. 5. The observation of an area of rarefaction constantly seen in the region of the gall bladder fossa. 6. The unusual accuracy of the procedure.